

# TECHNOLOGY OFFERS

HUNGARY

## L(-) malic acid production technology

### Description

The malic acid is one of the hydroxy acids that are produced by aerobic organisms in the so-called citric acid cycle (Szent-Gyorgyi – Krebs cycle). As natural organic acid, L(-) malic acid exists in various fruits and vegetables, giving fresh acidic taste. It is recognized as an acidic agent, which has high additional value in different foods, from the feature of non-volatility, easy-to-cook, and less hygroscopic nature. According to Fuso Chemical (the biggest world producer of DL malic acid), it is known as a result of the panel test of many times that equivalent acidity is left from malic acid of a few quantities as compared with citric acid. Because of its lower melting point, it is preferably prescribed than other food acid for candy manufacture. Malic acid's synergism with certain food ingredients and flavors makes it a versatile and flexible acid of choice to create new taste sensations and to add new twists to existing products.

### Areas of Application

- Food industry
- Chemical industry
- Pharmaceutical industry

### Advantages

This technology has some significant advantages in comparison with the traditional fermentation and chemical production. Firstly, downstream operations become cheaper by the high conversion rate and lack of bypass products. Secondly, the very intensive technology decreases the investment expenditures. Thirdly, it is an environment friendly production, which does not have any effect on human health. There are no environmental risks or contraindications to use this technology, because the genetically modified cells are killed before use. No huge amount of waste water, no bypass salts (esq.NaCl, CaSO<sub>4</sub>). The bioreactors are working as enzyme reactors during the process.

### Environmental Aspects

Cleaner production

### Development Status

Laboratory model

### Transfer Terms

Technology licensing, Research partnerships

### Contact:

Laser Consult Ltd. (Hungary),  
H-6701 PO Box 1191, Szeged, Hungary  
Tel: +36-62/562-782; Fax: +36-62/562-783  
E-mail: laserconsult@t-online.hu

## Portable harvesting tool for thorny species

### Description

The present invention relates to a portable harvesting tool for the thorny plants. The tool is handy, easy-to-use, efficient, affordable or inexpensive, easy-to-carry, light weight, and Y-shaped tool. The tool can also be used to harvest other plants like, out

of reach plants (grooves, steep hills), plants grown in aquatic or submerged areas, etc.

### Areas of Application

Agricultural industry

### Advantages

The tool is handy, easy-to-use, efficient, affordable or inexpensive, easy-to-carry, and light in weight.

### Environmental Aspects

Harvesting tools

### Development Status

Laboratory model

### Technical specifications

A Y-shaped portable harvesting tool for the thorny plants comprising extendible handle, wire, screws, foldable basket, aluminum ring spring, blades, and the tool.

### Transfer Terms

Consultancy, Technical services, Technology licensing, Research partnerships

### Contact:

Amity University, Sector-125,  
Distt. Gautam Buddha Nagar, Noida – 201303, India  
Tel: +91-0120-4392815; Fax: +91-0120-4-2431870  
E-mail: registrar@amity.edu

## Value-added chemicals from cashew nut shell liquid

### Description

A range of difunctional monomers (dihalides, diacids, diisocyanates, diamines, diacylhydrazides, diphenols, dialdehydes, etc.) and polymer additives are produced utilizing 3-pendadecyl phenol derived from cashew nut shell liquid (CNSL) using NCL technology. A host of high-performance polymers (polyimides, polyamides, polyesters, poly(amide-imide)s, etc.) can be prepared using the difunctional monomers mentioned above.

### Areas of Application

- Thickeners in paints, cosmetics, oils, food, and textiles
- Electrical insulating varnishes
- Enamels and adhesives
- Auto brake lining
- Substitute for linseed oil (in manufacturing foundry core oil, which is used as a binder)
- Cement hardening agent
- Used in lamination industry (for reduced brittleness and improved flexibility)
- Epoxy resins and rubber compounding resins

### Advantages

- High performance polymers produced from CNSL have improved processability characteristics
- Produced from low cost raw materials that are widely available in India
- Sustainable, renewable source

### Development status

Laboratory model

INDIA

### **Legal Protection**

Patent

### **Transfer Terms**

Technology licensing

## **Biomaterials from regenerated silk fibroin**

### **Description**

NCL scientists have developed various processes for producing 3D porous biomaterials from regenerated silk fibroin (RSF). Our process for the accelerated gelation of RSF resulting in a porous structure lowers the gelation time to a few hours instead of several days. The protein concentration can be between 0.1% and 40%. It works in a broad pH range of 5–7.5, within temperatures ranging from 20 to 70°C. Another process using electrospinning of RSF from an aqueous solution forms 3D porous structures (like non-woven mats), which have various biomedical applications. Surface modification of such biomaterials for improved performance is currently under progress.

### **Areas of Application**

- In tissue engineering — as bio-degradable bioabsorbable scaffolds (due to lower inflammatory and superior mechanical properties) and damaged tissue regeneration (e.g., bone, nerves, ligament, etc.)
- In wound healing bandages (provides a moist environment to facilitate re-epithelialization, re-modeling of connective tissues, and collagenization)
- As controlled drug delivery vehicles
- Silk fibroin peptides are used in cosmetics due to their glossy, flexible, elastic coating power, easy spreading and adhesion

### **Advantages**

- Free of microbial growth (superior performance of implants, lower toxicity)
- Shorter gelation time opens-up the potential spectrum of applications of the materials developed using this method
- Process is cheaper and faster (aqueous solution used instead of organic solvent eliminates several intermediate steps)
- Implant that could be reproduced with great consistency and quality
- Wide range of pore sizes: 1–10 microns

### **Development status**

Laboratory model

### **Legal Protection**

Patent

### **Transfer Terms**

Technology licensing

## **Titanium dioxide nano needles**

### **Description**

NCL technology involves a one-step electrochemical process for the synthesis of pure rutile titanium dioxide (TiO<sub>2</sub>) nanoneedles, with high aspect ratio, at room temperature. Nanoneedles with aspect ratio of equal to 10 can be produced with very good control over the morphology of the resulting TiO<sub>2</sub>.

### **Areas of Application**

Rutile TiO<sub>2</sub> is widely used as/in:

- UV protecting agent
- In optical coatings
- Beam splitters
- Anti-reflection coating
- Humidity sensor
- High-temperature oxygen sensor
- Photo-catalyst
- Biomedicine

### **Advantages**

- Less energy intensive (process carried out at room temperature)
- Ability to synthesize phase-pure rutile TiO<sub>2</sub>
- Reduced time for synthesis (as this process avoids any formation of intermediate amorphous powder or anatase phase and hence does not need heat treatment to form rutile TiO<sub>2</sub>)
- Easier, cheaper, quicker process (when compared to previous methods of synthesis)

### **Development Status**

Laboratory model

### **Legal protection**

Patent

### **Transfer terms**

Technology licensing

### **For the above three offers, contact:**

National Chemical Laboratory, CSIR, A208, PAML Building, Dr Homi Bhabha Road, Pune – 411007, India. Tel: +91-20-25902982; E-mail: dt.patel@ncl.res.in

## **Vacuum pump filter**

### **Description**

This technology safeguards all types of vacuum pumps from contamination from dust, mist, oily, and gaseous particles by providing a unique kind of filter, which operates on electrostatic precipitation principle. The technology also provides a low cost ultra high vacuum pressure electrostatic filter, which can filter effectively up to 0.3-micron size. This filter can eliminate chemical fume and solvent by 80%. The efficiency of 99.9% filtering of different foreign material can be achieved. The electrostatic filter can be used for all kinds of vacuum pumps up to ultra high vacuum pumps. *Features:* Traps all particles (solid, liquid, gases); traps even up to 0.3 micron particles; no periodic replacements; no choke up; high efficiency more than 98%. Other features such as increased area of collection electrodes, a separate cleaning fluid inlet valve, more grounded collection area for fumes and collectants are provided to improve filter efficiency and to increase filter cleaning.

### **Area of Application**

Battery, lightening, semiconductor, solar, chemicals, oil and gas, steel, automobiles, pharma and bulk drug, glass and ceramics, plastic and rubber, electrical and electronics in processes such as vacuum impregnation, filling, distillation, drying, degassing, metalizing, coatings, extrusion, conveying, forming, heat treatments, reactions, castings, molding and packaging.

# TECHNOLOGY OFFERS

## Advantages

- Reduces maintenance on vacuum pumps
- Reduces energy costs and cycle time
- Improves vacuum levels and process efficiency
- Safeguards all types of vacuum pumps with 98% efficiency

## Environmental aspects

Energy efficiency

## Development Status

Commercial prototype

## Legal Protection

Patent applied for

## Transfer Terms

Technology licensing

## Contact:

SkyQuest Technology Consulting Pvt. Ltd., 501, Krishna Complex, Opp. Devashish School, Bodakdev, Ahmedabad – 380054, India

Tel: +91-7940088139

E-mail: [kathak.mehta@skyquestventures.com](mailto:kathak.mehta@skyquestventures.com)

## Retort pouch technology

### Description

The technology relates to a ready-to-serve fish curry in retortable pouch. The technology provides a method for preparing the ready-to-serve fish curry in retortable pouch with excellent storage stability and quality with a shelf life of more than 1 year at ambient temperature.

### Areas of Application

Food, meat, fish processing

### Advantages

- The technology provides a method for preparing the ready-to-serve fish curry in retortable pouch with excellent storage stability and quality.
- The ready-to-serve fish curry is thermal processed and do not require any further processing before consumption.
- The thermal processing conditions have been standardized for this product in order to make it safe for consumers.

### Environmental aspects

Energy efficiency

### Development status

Pilot plant, fully commercialized

### Transfer Terms

Consultancy, Technical services, Technology licensing

### Contact:

Central Institute of Fisheries Technology, CIFT Junction, Mat-syapuri, Willingdon Island, Cochin – 682029, India

Tel: +91-4842666845

E-mail: [nitin.bpd@gmail.com](mailto:nitin.bpd@gmail.com)

## New design of tyre using Möbius Strip

### Description

This idea is applying of Möbius strip on the tires that use in different kinds of vehicles. Tire is a ring but in this idea will change to the Möbius strip in the form of appendix: Möbius strip obtained from a papery strip at rectangular figure for example in dimensions of

1 × 10 inch ABCD: that turn this strip semi-rotary and stick end of each 2 other of that, as AB not repose on the CD but repose on the DC. This ring only has the one surface as if place a pencil on the one point of that and drawing a line and go front regularly, will reach to the same 1st point again. In second formula may be use from 2 Möbius strip as they stick each other from flank for producing of new tires now the tires are exist in market that may be say they are twin and a furrow is exist in middle of tire probably that tires are used in lorry and trailer. May be use from second formula by formats designed in picture that contorted places in Möbius strip are distinct by black solid circles .

### Areas of Application

In production of tires and rubbers

### Transfer Terms

Joint venture, technology licensing, research partnerships, assignment, investment, others

### Contact:

Molavi BLVD, Shahid Kazem Nasiri Alley, 1st Northern Floor No. 13, Keyvan Aghvami & Baghe Family, Shahid Seddighi St, Second Floor, P.O. Box 35146-17117, Semnan – 35196-54891, Islamic Republic of Iran

Tel: +98-2313332494

E-mail: [keyvanaghvami@gmail.com](mailto:keyvanaghvami@gmail.com)

## Nanotechnology value-added products for industrial and domestic applications

### Description

We can offer technologies for manufacturing many nano-tech value-added products for domestic as well as industrial applications.

### Areas of Application

Multiple sectors including energy, food processing, rubber, chemicals, electronics and so on.

### Advantages

- Cost-effective
- Environment-friendly
- Cleaner production
- Proven and tested and certified by government agency.

### Environmental aspects

Cleaner production, waste utilization, energy efficiency

### Development status

Laboratory model, pilot plant, commercial prototype, fully commercialized

### Legal protection

Patent

### Transfer terms

Consultancy, turnkey

### Contact:

Industrial Technology Development Institute (ITDI), DOST Compound, General Santos Avenue, Bicutan, Taguig City, Metro Manila, Philippines

Tel: +632-837-2071

E-mail: [basiliablessie@gmail.com](mailto:basiliablessie@gmail.com)